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WEIGHT REDUCTION TECHNIQUES ADOPTED WHEN WEIGHT STANDARDS ARE ENFORCED

U S ARMY RESEARCH INSTITUTE
OF
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Rose, M.S., R. Moore, R. Mahnke, E. Christensen, E.W. Askew

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This study examined the prevalence of weight problems in the Army and examined the techniques that soldiers used to lose weight when weight standards were enforced. Analysis of 1069 questionnaires from U.S. Army soldiers showed that only 2.8% of the soldiers had participated within the last year in the Army Weight Control Program (AWCP). However, 57.8% of all the soldiers had attempted to lose weight at some time in their life; 16.7% were overweight according to the Army's Maximum Allowable Weight standards, and 85.9% considered themselves to be overweight according to their personal ideal weight. About 13.6% had attempted to lose weight before 18 years of age, which indicates long-term weight problems; 65.9% of all soldiers had gained weight since joining the Army. The weight change was an 8.7±19.3 lb (mean±SD) weight gain. Weight concerns appear to be a lifetime problem starting long before some soldiers join the Army, affecting more soldiers than those identified by the AWCP and possibly developing during a career in the Army. Nutrition/education programs should begin during Basic Training and continue annually to catch those who have been attempting to lose weight since childhood and to prevent the weight gain that appears to be inevitable with aging and a career in the Army.

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USARIEM TECHNICAL REPORT

WEIGHT REDUCTION TECHNIQUES ADOPTED WHEN WEIGHT STANDARDS ARE ENFORCED

Madeleine S. Rose, Ph.D., R.D.[1]
CPT Robert Moore, Ph.D.
Richard Mahnke
Elaine Christensen
COL Eldon W. Askew, Ph.D.

January 1993

U.S. ARMY RESEARCH INSTITUTE OF ENVIRONMENTAL MEDICINE
NATICK, MA 01760-5007

[1]This author retired from the U.S. Army and is employed presently by the Department of Nutrition and Food Science, South Dakota State University, Brookings, SD 57007.

TABLE OF CONTENTS

TABLE OF CONTENTS (cont'd)

TABLE OF CONTENTS (cont'd)

LIST OF TABLES

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They also want to thank the staff of the Personnel Information Systems Command (PERSINSCOM), Hoffman Directorate of Information Management Information Center, 200 Stovall St., Alexandria, VA 22332 for providing all the statistics on Army personnel and for randomly selecting the soldiers to participate in the study.

Thanks also go to the personnel of the Central Locator/Mail sections who ensured that the questionnaires got to the right addressees.

SUMMARY

The major purposes of this study were to examine the prevalence of weight problems in the Army and to examine the techniques that soldiers used to lose weight when weight standards are enforced. Analysis of 1069 questionnaires showed that only 2.8% of the soldiers had participated within the last year in the Army's Weight Control Program (AWCP), 57.8% of all the soldiers had attempted to lose weight at some time in their life, 16.7% were overweight according to the Army's Maximum Allowable Weight standards, and 85.9% considered themselves to be overweight according to their personal ideal weight. About 13.6% had attempted to lose weight before 18 years of age which indicates long term weight problems. Another major problem was that 65.9% of all soldiers had gained weight since joining the Army. The weight change was a 8.7$\pm$19.3 lb (mean$\pm$SD) weight gain. Weight concerns appear to be a lifetime problem starting long before some soldiers join the Army, affecting more soldiers than those identified by the AWCP, and possibly developing during a career in the Army.

Appearance (42.8%), concerned with health (32.6%), and upcoming weigh-in (20.9%) were the major reasons for attempting to lose weight; diet and exercise were the major techniques to lose weight. The percentages of soldiers using drugs (6.2%), saunas (5.2%), and bulimia (2.7%) to lose weight were small. The use of these techniques is of concern because they can cause health problems when used repeatedly or for fairly long periods of time.

All soldiers, whether they have had an obvious weight problem or not, need to be the target of a nutrition and fitness health promotion program because they are very likely to fall into one of the following categories: currently worried about their weight, gaining unwanted weight during their Army career, and/or using undesirable weight control techniques to maintain appropriate weight. Nutrition/exercise program and education efforts need to: discourage undesirable weight control practices, encourage sensible lifelong weight control and behavioral changes, discuss the long-term effects of present habits and relate the total well-being to nutrition, fitness, and performance. Education should begin during Basic Training and continue annually to catch those who have been attempting to lose weight since childhood and prevent the weight gain that appears to be inevitable with aging and a career in the Army.

INTRODUCTION

At the present time, the Army is very concerned with the weight of its soldiers. Soldiers are weighed twice a year to determine if their weights exceed the Army's Maximum Allowable Weight (MAW) standards described in Army Regulation (AR) 600-9 (1). Personnel records are flagged and personnel actions are affected if a soldier's weight exceeds the MAW standards. The Army's Weight Control Program (AWCP) was designed to help the soldiers whose weight and body composition exceeded the MAW standards and percent body fat standards, respectively (1). Statistics show that some soldiers do have a weight problem. The Army pamphlet, "I Am The American Soldier," reports that 8.5-34.5% (Table 1) of the soldiers exceeded the Army weight and body fat standards in 1983 (2).

TABLE 1
PERCENTAGE OF SOLDIERS THAT EXCEEDED THE
ARMY'S MAXIMUM ALLOWABLE WEIGHT AND BODY FAT STANDARDS

	Age Groups (years)			
GENDER	17-20	21-27	28-39	40+
Male	8.5	13.5	16.0	18.5
Female	34.5	23.0	34.3	21.1

Adapted from reference 2, "I Am The American Soldier."

A review of personnel records by Personnel Information Systems Command (PERSINSCOM communication) in Oct 1989, showed that approximately 13,132 or 2% of all enlisted and 614 (0.7%) of officer personnel had records that were flagged because they were overweight (Table 2). A study of troops at Fort Bliss, TX reported that 306 overweight soldiers had been referred to the Troop Medical Clinic in a 2-month period (Table 3). About 52% of these referrals eventually were enrolled in the AWCP. The Army has concentrated its resources on helping the soldiers whose weights and percent body fat exceeded standards.

TABLE 2
PERCENTAGE OF OVERWEIGHT SOLDIERS*

CATEGORIES	OVERWEIGHT	TOTAL	%
Enlisted	13,132	657,268	2.0
Warrant Officer	95	15,028	0.6
Officer	519	79,181	0.7
TOTAL	13,746	751,477	1.8

*Based on flagged Records of total Army as of Oct 1989

Because being overweight results in adverse personnel actions, anecdotal information indicates that many overweight soldiers may be using techniques that cause rapid weight loss before every semi-annual weigh-in. Many of the techniques listed in the questionnaire in Appendix A were used by Army Reservists to control their weight (10). The problem is that many of the techniques that cause rapid weight loss such as diuretics, laxatives, very low

calorie liquid protein diets, bulimia, fasting, and dehydration can adversely affect the health, performance, physiological function, endurance, and cardiovascular fitness of the soldier (4-7,9,14-19). Dillon showed that 1.2% of 522 active duty soldiers were bulimics while about 25% reported binge eating (8). The weight loss produced by these techniques is usually quickly regained which leads to repeated cycles of weight loss and regain (weight cycling). Research on humans and animals has shown that it is harder to lose weight the second or third time of weight cycling (11,12). Proper nutrition and exercise can lead to weight loss without compromising the health or performance of soldiers (13,20). If undesirable techniques of weight control are prevalent, nutrition/exercise programs and education efforts which discourage these practices and encourage sensible weight loss and behavioral changes may need to be emphasized. Therefore, information about the prevalence of soldiers who are overweight and about the different techniques that active duty soldiers use to lose weight are necessary to determine if the Army needs to modify or expand its nutrition policy. The objective of this study is to determine the prevalence of soldiers attempting to lose weight and the techniques that they select to accomplish their goals.

METHODS

A questionnaire (Appendix A) was created by the investigators and pre-tested on 41 enlisted and officer personnel at U.S. Army Research Institute of Environmental Medicine (USARIEM). The data in the questionnaire were divided into 5 major sections:

1. Physical and military characteristics including weights at certain critical periods in the soldier's life (current weight, weight upon joining the Army, minimum weight, maximum weight, ideal weight)
2. Information about attempts to lose weight, current attempts at weight loss, amount of weight trying to lose, and time period for weight loss
3. Enrollment in AWCP
4. Techniques used to lose weight, reasons, duration, and number of times the technique was used
5. Number of times reached ideal weight and number of weeks maintained ideal weight

Further data were derived from the weight information. See the Glossary (Appendix B) for a listing. Answers reported in the questionnaire will remain anonymous.

The US Army PERSINSCOM provided statistics about the breakdown of rank and gender of Army personnel. About 0.5% of the total number of US Army personnel at the time of this survey (~800,000) were randomly selected on the basis of rank and gender to participate in the study. Soldiers stationed in Europe, the Far East, South and Central America, Alaska, Hawaii, and the continental United States were included in the study.

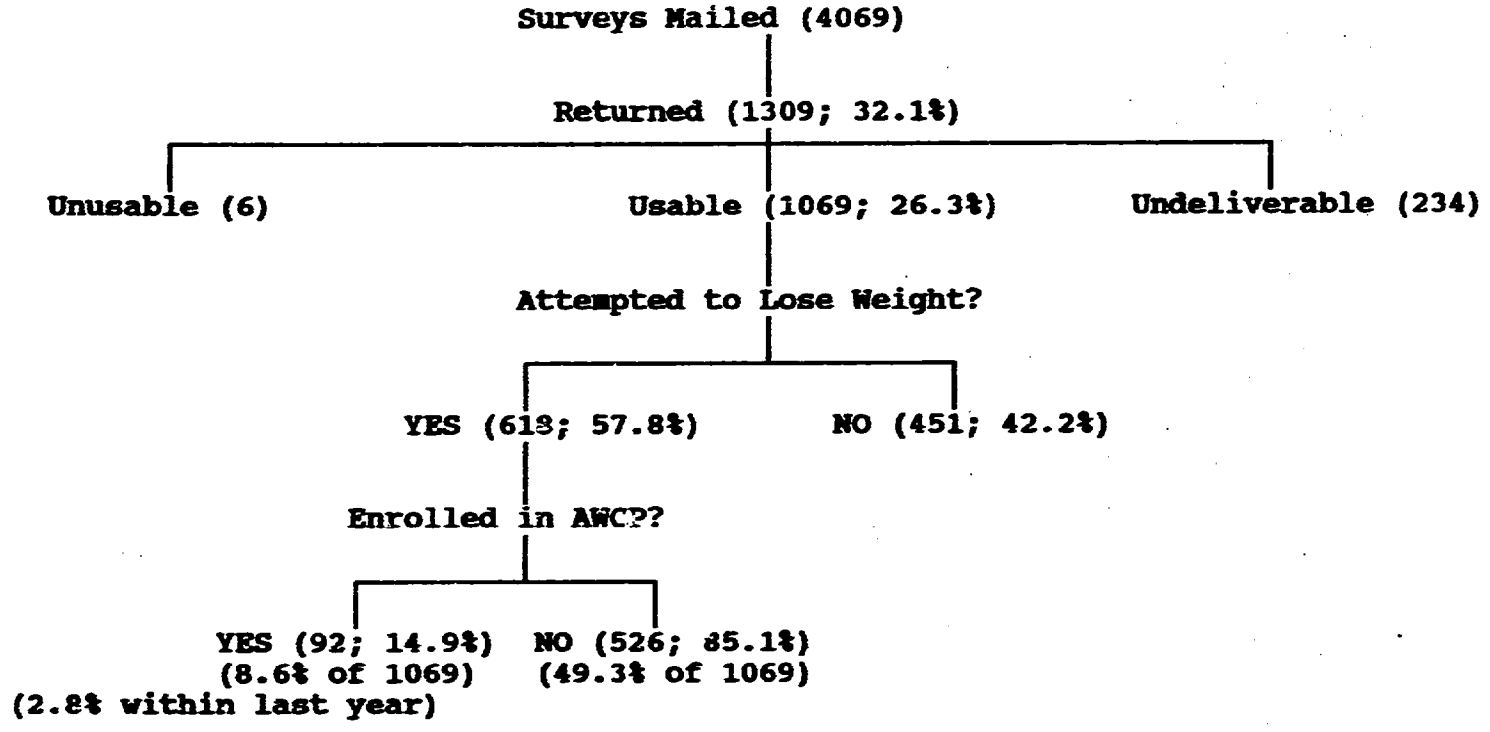
Questionnaires were mailed to 4069 U.S. Army soldiers in the continental U.S. and overseas. A return rate of 70% was desired but only 32.1% of the questionnaires were returned and only 26.3% (n=1069) could be used. This number of questionnaires is small in relation to the total Army force (0.13% of the total Army). However, the information from this sample is important because of the large number of respondents, the representation of all ranks, and the excellent proportion of females (17.7% in the present study sample compared to 11.1% in the total Army). This sample size was large enough to indicate trends that need to be confirmed in a follow-up study achieving a higher return rate.

The information was collected on an optical scanning system form (Appendix A) to simplify data entry. The sheets were visually scanned by the investigators to ensure that they were completed correctly prior to computer scanning. The Survey Network System (National Computer Systems) was used to optically scan and enter the data into computer files. The data files were checked for obvious errors.

STATISTICS

The Statistical Package for the Social Sciences PC program was used to produce descriptive statistics on the data of all respondents, on the subgroup of soldiers who had attempted to lose weight, and then again on the smaller subgroup of those enrolled in the AWCP. See Figure 1 for a breakdown of the data. Due to the extensive amount of data, in-depth information can be found in appendices C-X.

Figure 1
Diagram of Subgrouping of Questionnaires



RESULTS

The physical characteristics of the 1069 subjects (26.3% of mailed questionnaires) whose data could be used in this study are summarized in Table 3. More detailed descriptions of the physical characteristics, demographics, and military characteristics of the sample are available in Appendices C and D. The typical subject was white, male, married, a college graduate, and lived in civilian housing. The Time in Service (TIS) ranged from <2 years to >20 years with 5-10 years being the most frequent amount of time spent in the Army. All military ranks were represented and the proportions tended to follow that of the total Army. Males accounted for 82.3% and females for 17.7% (Table 4) of the total number of subjects.

TABLE 3
PHYSICAL CHARACTERISTICS
(n=1069)

VARIABLES	MEAN ± SD	MIN	MAX
Age, yrs	32 ± 8	17	58
Height, in	68.9 ± 3.3	58.5	78.75
Weight, lb	166 ± 27	100	280

One of the major findings was that more than half of the total number of subjects (57.8%) had attempted to lose weight at some time in their life (Table 4). About half of the males and three-fourths of the females had a history of attempting to lose weight. Data was compiled showing the distribution of subjects who attempted to lose weight by rank and

gender (Table 5). In most of the lower enlisted ranks (≤E6), the number who had attempted to lose weight was equal to the number who had not. At the higher enlisted ranks and among the officer ranks, the majority of soldiers had attempted to lose weight.

Of the soldiers who had attempted to lose weight sometime in their lifetime, 73.1% were still trying to lose weight (Table 6). The amount of weight that they were trying to lose ranged from 2-46 lb with 6-10 lb being the most frequently mentioned weight loss goal and the mean being 13.2±7.9 lb (Table 7). The length of time that they were taking to lose the weight ranged from 1-90 weeks with 8 weeks being the mode, 4 weeks being the next frequently listed time frame, and 9.5±8.6 weeks being the mean (Table 8). 92 subjects or 8.6% of the total number of subjects had been enrolled in the AWCP at sometime in their career but only 2.8% within the year prior to the survey (Table 9).

TABLE 4
ATTEMPTS TO LOSE WEIGHT AMONG ARMY PERSONNEL

	MALE	FEMALE	TOTAL
YES	474	144	618 (57.8%)
NO	406	45	451 (42.2%)
	880 (82.3%)	189 (17.7%)	1069 (100%)

TABLE 5

ATTEMPTS TO LOSE WEIGHT ACCORDING TO MILITARY RANK

	AFFIRMATIVE RESPONSES			TOTAL RESPONSES
RANK	MALE	FEMALE	TOTAL	
E1	11	1	12	28
E2	7	3	10	18
E3	13	5	18	46
E4	39	18	57	121
E5	44	17	61	118
E6	61	13	74	139
E7	60	5	65	101
E8	23	0	23	31
E9	5	0	5	8
WO1 & WO2	11	0	11	18
WO3 & WO4	6	0	6	11
2LT	3	9	12	21
1LT	22	14	36	54
CPT	63	28	91	167
MAJ	51	15	66	86
LTC	37	15	52	67
COL	15	1	16	29
GEN	3	0	3	5
Missing				1
TOTAL	474 (76.7%)	144 (23.3%)	618 (100%)	1069

TABLE 6

CURRENTLY ATTEMPTING TO LOSE WEIGHT

CATEGORIES	FREQUENCIES	%
YES	452	73.1
NO	165	26.7
Missing	1	0.2
TOTAL	618	100.0

TABLE 7

AMOUNT OF WEIGHT CURRENTLY TRYING TO LOSE

WEIGHT (lbs)	FREQUENCIES	%[1]
1-5	80	17.7
6-10	176	38.9
11-15	83	18.4
16-20	55	12.2
21-25	23	5.0
>25	35	7.7
TOTAL	452	

[1]May not add up to 100% due to rounding.

TABLE 8
PREDICTED LENGTH OF TIME FOR CURRENT WEIGHT LOSS

TIME (wks)	FREQUENCIES	%[1]
1-4	134	29.6
5-8	143	31.6
9-12	102	22.6
13-16	25	5.5
17-20	20	4.4
>20	28	6.2
TOTAL	452	

[1]May not add up to 100% due to rounding.

TABLE 9
ENROLLMENT IN AWCP

	MALE	FEMALE	TOTAL	
YES	76	16	92	(8.6%)
NO	804	173	977	(91.4%)
TOTAL	880	189	1069	(100.0%)

The weights of all the subjects participating in the study (n=1069) ranged from 40% under the MAW standard to 40% over the MAW standard (Table 10). About 83.3% of the soldiers were at or weighed less than the MAW standard and therefore supposedly did not have to lose weight. Only 16.7% of the entire group was overweight. Most of the subjects weighed within 20% of their MAW standard. Individuals are considered obese if their weight is >20% above the weight standard. Since the Army standard is much higher than the standard from the Metropolitan Height Weight Tables, obesity is definite if the soldier's weight exceeds the MAW standard by 20%.

Important information was extracted from the data on the subgroup of soldiers who had attempted to lose weight at some time in their life (n=618). The data are reported in Tables 11-14 and include comparisons of:

1. Current weight vs MAW standard (WT-MAW) which is used to define overweight in the Army (Table 11)
2. MAW standard vs the weight that the soldier considers to be his ideal weight (MAW-Ideal WT) (Table 12)
3. Current weight vs ideal weight (WT-ideal WT) (Table 13)
4. Current weight vs weight upon entering the Army (WT-ARMY WT) (Table 14)

Only about 26.8% of the subjects attempting to lose weight were actually overweight when compared to the MAW standard (Table 11). The other 73.2% were probably trying to lose weight because their personal ideal weight was lower than the MAW standard. The ideal weight of most of the subjects (86.9%) was lower than the Army's standard (Table 12). When the difference between the current weight and the ideal weight was calculated (Table 13), 85.9% were overweight compared to their ideal weight. The Army considers 26.8% of those attempting to lose weight to be overweight (Table 11), while 85.9% of the soldiers consider themselves overweight (Table 13). The variation in these figures is important because many of these soldiers may not be participating in the AWCP but would be attempting to lose weight on their own.

Data on the soldier's current weight is compared to his weight when first joining the Army. This information shows that 65.9% of the soldiers had gained weight since joining the Army (Table 14).

TABLE 10
PERCENTAGE OF BODY WEIGHT EXCEEDING MAXIMUM ALLOWABLE WEIGHT STANDARD[1]

WT DIFF[1] (%)	MALE		FEMALE		TOTAL	
	FREQ	%[2]	FREQ	%	FREQ	%
-61+						
-51 to -60						
-41 to -50						
-31 to -40	1	0.1	1	0.5	2	0.2
-21 to -30	76	8.6	11	5.8	87	8.1
-11 to -20	256	29.1	68	36.0	324	30.3
<0 to -10	379	43.1	63	33.3	442	41.3
0	29	3.3	6	3.2	35	3.3
>0 to 10	101	11.5	31	16.4	132	12.3
11 to 20	31	3.5	9	4.8	40	3.7
21 to 30	5	0.6			5	0.5
31 to 40	2	0.2			2	0.2
41 to 50						
51 to 60						
61+						
Missing	0	0	0	0	0	0
TOTAL	880		189		1069	

[1][(CURRENT WEIGHT - MAW)/MAW]x100

- = underweight

+ = overweight

[2]May not add up to 100% due to rounding.

TABLE 11

COMPARISON OF CURRENT WEIGHT TO MAXIMUM ALLOWABLE WEIGHT STANDARD (WT-MAW) OF SOLDIERS WHO ATTEMPTED TO LOSE WEIGHT

WT-MAW (lbs)	MALE		FEMALE		TOTAL	
	FREQ	%[1]	FREQ	%	FREQ	%
-61+						
-51 to -60	1	0.2			1	0.2
-41 to -50	6	1.3			6	1.0
-31 to -40	23	4.9	4	2.8	27	4.4
-21 to -30	48	10.1	20	13.9	68	11.0
-11 to -20	106	22.4	42	29.2	148	23.9
- 1 to -10	138	29.1	33	22.9	171	27.7
0	25	5.3	6	4.2	31	5.0
1 to 10	61	12.9	22	15.3	83	13.4
11 to 20	32	6.8	14	9.7	46	7.4
21 to 30	21	4.4	3	2.1	24	3.9
31 to 40	6	1.3			6	1.0
41 to 50	4	0.8			4	0.6
51 to 60	2	0.4			2	0.3
61+	1	0.2			1	0.2
Missing	0	0	0	0	0	0
TOTAL	474		144		618	

- = Weight < MAW

+ = Weight > MAW

[1]May not add up to 100% due to rounding.

TABLE 12
COMPARISON OF THE MAXIMUM ALLOWABLE WEIGHT STANDARD
TO THE IDEAL WEIGHT (MAW-IDEAL WT)
OF SOLDIER'S WHO ATTEMPTED TO LOSE WEIGHT

MAW-IDEAL WT (lbs)	MALE		FEMALE		TOTAL	
	FREQ	%[1]	FREQ	%	FREQ	%
-61+	1	0.2	0	0	1	0.2
-51 to -60						
-41 to -50	1	0.2			1	0.2
-31 to -40						
-21 to -30	1	0.2	1	0.7	2	0.3
-11 to -20	13	2.7	2	1.4	15	2.4
- 1 to -10	47	9.9	1	0.7	48	7.8
0	9	1.9	2	1.4	11	1.8
1 to 10	82	17.3	28	19.4	110	17.8
11 to 20	140	29.5	64	44.4	204	33.0
21 to 30	111	23.4	34	23.6	145	23.5
31 to 40	50	10.5	11	7.6	61	9.9
41 to 50	16	3.4			16	2.6
51 to 60	1	0.2			1	0.2
61+						
Missing	2	0.4	1	0.7	3	0.5
TOTAL	474		144		618	

- = Ideal Wt higher than MAW
+ = Ideal Wt less than MAW

[1]May not add up to 100% due to rounding.

TABLE 13
COMPARISON OF CURRENT WEIGHT TO THE IDEAL WEIGHT (WT-IDEAL WT) OF SOLDIERS WHO ATTEMPTED TO LOSE WEIGHT

WT-IDEAL WT (lbs)	MALE		FEMALE		TOTAL	
	FREQ	%[1]	FREQ	%	FREQ	%
-61+						
-51 to -60						
-41 to -50						
-31 to -40						
-21 to -30						
-11 to -20	4	0.8	2	1.4	6	1.0
- 1 to -10	30	6.3	8	5.6	38	6.1
0	28	5.9	12	8.3	40	6.5
1 to 10	228	48.1	74	51.4	302	48.9
11 to 20	132	27.8	31	21.5	163	26.4
21 to 30	38	8.0	10	6.9	48	7.8
31 to 40	8	1.7	5	3.5	13	2.1
41 to 50	4	0.8	1	0.7	5	0.8
51 to 60						
61+						
Missing	2	0.4	1	0.7	3	0.5
TOTAL	474		144		618	

- = ideal > weight
+ = weight > ideal

[1]May not add up to 100% due to rounding.

TABLE 14
COMPARISON OF CURRENT WEIGHT TO THAT
WHEN JOINING THE ARMY (WT-ARMY WT) OF SOLDIERS
WHO ATTEMPTED TO LOSE WEIGHT

WT-ARMY WT (lbs)	MALE		FEMALE		TOTAL	
	FREQ	%[1]	FREQ	%	FREQ	%
-61+	1	0.2	0	0	1	0.2
-51 to -60	2	0.4			2	0.3
-41 to -50	3	0.6			3	0.5
-31 to -40	8	1.7			8	1.3
-21 to -30	14	3.0	3	2.1	17	2.8
-11 to -20	36	7.6	7	4.9	43	7.0
- 1 to -10	64	13.5	40	27.8	104	16.9
0	22	4.6	5	3.5	27	4.4
1 to 10	109	23.0	43	29.9	152	24.6
11 to 20	83	17.5	26	18.1	109	17.6
21 to 30	56	11.8	14	9.7	70	11.3
31 to 40	35	7.4	6	4.2	41	6.6
41 to 50	21	4.4			21	3.4
51 to 60	12	2.5			12	1.9
61+	2	0.4			2	0.3
Missing	6	1.3	0	0	6	1.0
TOTAL	474		144		618	

- = lost weight since joining Army
+ = gained weight since joining Army

[1]May not add up to 100% due to rounding.

The mean weight change for all subjects who attempted to lose weight was a 8.7 ± 19.3 lb (mean ± SD) gain in weight. Two subjects gained more than 60 lb and one lost more than 82 lb. The appendices show other data such as: the difference between maximum vs minimum weight since joining the Army, current vs minimum weight since joining the Army, and current vs maximum weight since joining the Army (Appendices E to G). These tables show the wide variation in weight since the soldier joined the Army.

Some very interesting data is shown about the problems that soldiers have had reaching their ideal weight and indications of weight cycling (Tables 15 and 16). A little more than a fourth of all the soldiers attempting to lose weight never reached their ideal weight. Of more interest are the numbers of soldiers that reached their ideal weight 2, 3, and 4 or more times. About 18.1% of these soldiers were losing and regaining their weight very frequently (≥ 4 times). Most were able to maintain their ideal weight for 3 months or less.

Some of the subjects had been dieting since they were 5 years old while others had started in their 50s (Table 17, Appendix H). About 13.6% of the subjects had started weight loss programs when <18 years old or well before joining the Army.

Appendices I-T contain information about the subgroup of soldiers who had been enrolled in the AWCP. The soldiers who had been enrolled in the AWCP: were generally male (82.6%); ranged in age from 19 to 52 years; had current weights of 123-250 lb; were from all ranks; had TIS in all categories; were of all races but generally white; and had some college education (Appendices I and J). It would seem logical that soldiers who had been considered overweight and who had participated in the AWCP would consider the MAW to be too low since their weight was higher. Appendix M shows that not all soldiers who had been enrolled in the AWCP considered that the MAW standard was too low. About 60% felt that the MAW standard was too high for their height even though they had exceeded the standard at some point in their career. About 27.2% of the soldiers who had been enrolled in AWCP now weighed less than the MAW standard by 1-17 lb, but most of the subjects were still overweight (Appendix N). The subjects who were part of the AWCP were not necessarily the youngest to start on diets (Appendix T). About 23.9% started weight loss programs between 12-20 years of age and an additional 57.6% started between 21-30 years of age.

TABLE 15

NUMBER OF TIMES SOLDIERS REACHED IDEAL WEIGHT

TIMES	FREQUENCIES	%[1]
Never	169	27.3
Once	148	23.9
Twice	116	18.8
Three Times	61	9.9
Four or More Times	112	18.1
Missing	12	1.9
TOTAL	618	

[1]May not add up to 100% due to rounding.

TABLE 16

LENGTH OF TIME THAT IDEAL WEIGHT WAS MAINTAINED DURING REPEATED ATTEMPTS

DURATION (weeks)	NUMBER OF ATTEMPTS		
	FIRST (n=380)	SECOND (n=231)	THIRD (n=132)
0-12	142	93	63
13-24	39	33	16
25-36	37	21	16
37-52	71	34	19
53-104	33	28	11
>104	58	22	7

TABLE 17
AGE STARTED CONTROLLING WEIGHT

AGE RANGE (yr)	FREQUENCY	%[1]
5- 9	8	1.3
10-14	24	4.0
15-19	95	15.7
20-24	154	25.4
25-29	137	22.6
30-34	95	15.7
35-39	53	8.7
40-44	33	5.4
45+	7	1.2
Missing	12	
TOTAL	618	

[1]May not add up to 100% due to rounding.

Data were collected on reasons for attempting to lose weight (Table 18, Appendix U) by soldiers forced to meet weight standards. Since the subjects were allowed to list any reason that pertained to their losing weight and as many reasons as they wanted for each weight control technique that they used, many combinations were listed. In general the combinations contained 6 basic reasons: Appearance, Upcoming Weight-In, Concerned with Health, Healthy but Concerned, and Ordered to Lose Weight. A more realistic way of studying the reasons was to tally the number of times that the 6 basic reasons were listed in the combinations. This method of analysis showed that Appearance (42.8%) was the major reason for attempting to lose weight followed by Concerned with Health (32.6%) and Upcoming Weigh-In (20.9%).

All of the techniques that were used to lose weight (Appendix V) were grouped into six major categories (Table 19). The 618 soldiers who attempted to lose weight listed 2417 episodes at which weight control techniques were used. Dieting was listed 52.4% of the time while Exercise was listed 29% of the time. Three dangerous weight control techniques were used by a small percentage of subjects: the practice of Bulimia (66/618 subjects), the use of Saunas (125/618 subjects), and the use of Drugs (150/618 subjects). Table 20 showed that a majority of the subjects practiced Bulimia for less than a week at a time while most Dieted and Exercised for 4 weeks or longer at each weight loss attempt. Drugs and Saunas were used most often "less than a week" or "more than 4 weeks" to lose weight (Appendix W). In regard to the repetitious use of the techniques, Bulimia and Commercial Clinics were used only once by a majority of the subjects (Table 21). Diets and Exercise were used on 4 or more separate occasions as weight control techniques. See Appendices W and X for more detailed information. Fasting, protein sparing fasts, commercial weight loss products are grouped under dieting. Since these techniques can be harmful, the detailed information in the appendices should be studied carefully.

How the soldiers decided on the technique to use for weight control is recorded here (Table 22). Females tended to use professional help while males depended on the advice of "someone else." When asked about designing a personal weight control program (Table 23), the majority of males and females said they would use Army sources.

TABLE 18
REASONS FOR ATTEMPTING TO LOSE WEIGHT
(n=2417)

REASONS	%[1]
Appearance	42.8
Concerned w/Health	32.6
Weigh-In	20.9
Other	3.7

[1]May not add up to 100% due to rounding.

TABLE 19

WEIGHT CONTROL TECHNIQUES USED BY SOLDIERS

TECHNIQUES	FREQUENCY	%[1]
Diets	1267	52.4
Exercise/Activity	701	29.0
Drugs	150	6.2
Sauna	125	5.2
Commercial Clinics	108	4.5
Bulimia	66	2.7
TOTAL	2417	

[1]May not add up to 100% due to rounding.

TABLE 20
DURATION OF USAGE OF
WEIGHT CONTROL TECHNIQUES

TECHNIQUES	DURATION OF TECHNIQUE USAGE (weeks)				
	≤1	2	3	≥4	
Bulimia	49	2	3	5	
Diets	199	198	160	614	
Drugs	45	30	12	52	
Exercise/Activity	33	35	51	544	
Sauna	32	24	15	45	
Commercial Clinics	51	7	4	34	
TOTAL	409	296	245	1294	2244
PERCENT[1]	(18.2%)	(13.2%)	(10.9%)	(57.7%)	

[1]May not add up to 100% due to rounding.

TABLE 21
NUMBER OF TIMES WEIGHT CONTROL TECHNIQUES USED TO LOSE WEIGHT

TECHNIQUES	TIMES				
	1	2	3	≥ 4	
Bulimia	28	4	3	12	
Diets	207	129	128	625	
Drugs 47	25	8	48		
Exercise/Activity	84	56	47	431	
Sauna	26	16	13	51	
Commercial Clinics	66	13	5	14	
TOTAL	438	243	204	1181	2066
PERCENT[1]	(21.2%)	(11.8%)	(9.9%)	(57.2%)	

[1]May not add up to 100% due to rounding.

TABLE 22

BASIS FOR DECISION ON WEIGHT CONTROL TECHNIQUE TO USE

RESOURCE	FEMALE	MALE	TOTAL	%[1]
Friend	18	89	107	13.5
Someone Else	17	96	113	14.2
Relatives	11	41	52	6.5
Books	12	49	61	7.9
Magazines	18	46	64	8.1
Professional Help	35	62	97	12.2
TV Commercial	10	24	34	4.3
TV Program	3	10	13	1.6
Other	64	189	253	31.9
TOTAL	188	606	794	

[1]May not add up to 100% due to rounding.

TABLE 23

RESOURCES THAT SOLDIERS WOULD USE
TO DESIGN A PERSONAL WEIGHT CONTROL PROGRAM

RESOURCE	FEMALE	MALE	TOTAL	%[1]
Outside Help	41	221	262	42.4
Army Sources	95	234	329	53.2
Missing	8	19	27	4.4
TOTAL	144	474	618	

[1]May not add up to 100% due to rounding.

DISCUSSION

The present study indicated that there is a greater number of overweight soldiers in the Army than those enrolled in the AWCP. The survey found that 16.7% of the 1069 responders were overweight according to MAW standards. This value was higher than the 1.8% for the total Army found in the PERSINSCOM records (Table 2). The discrepancy could be due to the fact that PERSINSCOM's records are limited to those soldiers who are currently enrolled in the AWCP, whereas this study included also those who had been enrolled in the past. When the subjects were limited to those who actually had been enrolled in the AWCP within the past year, the number dropped to 30 or 2.8% which is similar to the PERSINSCOM statistics. Therefore the remainder of the overweight soldiers, 13.9%, are not participating in the AWCP. A second reason for the large percentage of overweight soldiers could be that less than 32.1% of the questionnaires had been returned. Persons with weight concerns and a vested interest in improving the AWCP might have been more conscientious about answering the questionnaire and thus skewed the data. Another more likely reason for the discrepancy could be that there is an unacknowledged group of soldiers who normally weigh more than their MAW limit but who lose the excess weight just before the semi-annual weigh-in to meet the standard. After the weigh-in they might regain the weight. This process could repeat itself every 6 months (weight cycling). Most of the soldiers attempting to lose weight (285/618) were within $\pm$10 lb of their MAW standard so that "weight cycling" to weigh less than their MAW is possible. In this manner the overweight soldiers escape being placed on the AWCP with all of its penalties and stigma.

The data show that nearly six times as many subjects (57.8%) had attempted to lose weight sometime in their lifetime as were enrolled in the AWCP (Tables 4 and 9). The attempts were not limited to past experiences because about 73.1% were trying to lose weight currently (Table 6). Since these subjects had not been identified by the AWCP, it supports our theory that there are soldiers "weight cycling" to get their weight below the MAW standard before their semi-annual weigh-in. Further support for the "weight cycling" theory, is the fact that nearly 20% of the soldiers admitted to losing weight 4 or more times to reach their ideal weight (Table 15). A larger percentage (27.3%) of the soldiers who attempted to lose weight never reached their ideal weight, which could indicate that they felt a constant need to try to lose weight in an effort to make their ideal weight or reach the MAW standard. The largest percentage of soldiers who reached their ideal weights generally maintained that weight for a very short period of time (less than 3 months) so that "weight

cycling" appears to be inevitable (Table 16). And finally, about one fifth of the soldiers listed "upcoming weigh-in" as one of their major reasons for attempting to lose weight (Table 18). Since weigh-ins occur every 6 months, this could trigger another weight cycling episode.

Studies have shown that "weight cycling" is detrimental to the health of humans because losing weight becomes more difficult when done repeatedly (11,12), because of its effects on the cardiovascular system (6,15,17,18) and because of the possibility of reduced strength and endurance (15-17,22,23). Saris states that recent epidemiological data from the Zutphen Study show that "weight cycling" is positively related to a higher risk of Coronary Heart Disease and that the relative fat mass may be greater when weight is regained on "weight cycling" (21). The Army program may be contributing to the weight cycling problems by the semi-annual enforcement of weight standards. If maintaining weight is important, then a more comprehensive and consistent program needs to be developed. Soldiers within 10 lbs of the MAW standard need to be weighed more frequently (i.e., weekly or monthly) for an extended period of time. This would prevent weight cycling from occurring because the soldiers do not have an extended period of time (6 months presently) to regain the weight. Weight loss and maintenance must become a permanent part of the soldier's lifestyle and not just a semi-annual bother. The survey showed that 53.2% of the respondents who had attempted to lose weight would be willing to use Army help to design a weight control program (Table 23). Since they are willing, soldiers need to be educated about the dangers of "weight cycling" and the relationship of nutrition and weight reduction practices to future health problems.

All of the weight problems did not begin since the soldiers joined the Army. The weight problems started as early as 5 years of age for some soldiers (Table 17). This indicates a problem in the civilian population that needs to be addressed. Not only did 13.6% of the soldiers start their Army career with weight problems but 65.9% had gained weight since joining the Army (Table 14). The weight change for all subjects who had ever attempted to lose weight (n=618) was a mean gain of 8.7$\pm$19.3 lb. The present study cannot pinpoint the reason for the weight gain but it points to a need for further research. It is very possible that the availability of three large meals per day, the training/exercise programs, and/or the final growth spurt could be increasing muscle weight in young basic trainees. However, the majority of 20-34 year old soldiers (63.7%) appeared to be concerned about this weight gain because this is the period when most started weight reduction diets. At this

point in their career most soldiers could be susceptible to weight gain due to decreased exercise with increased management responsibilities, assignment to less strenuous jobs, decreased basal metabolic rate with increasing age, decreased requirements for growth, increased availability of food, and improved financial status. Weight problems appear to be a common occurrence which must be addressed early in a soldier's career and followed up periodically.

The major reason for attempting to lose weight was Appearance, followed by concerned with health, and upcoming weigh-in (Table 18). It was not surprising that Appearance was listed as the number 1 reason for weight control. AR600-9 states that the primary objectives of the Army's Weight Control Program are to ensure that all personnel are able to meet the physical demands of their duties under combat conditions and present a trim military appearance at all times. Therefore, soldiers are reminded constantly of the importance of Appearance. One misconception of many soldiers is that weight loss will solve all their problems in presenting a trim military appearance. Many soldiers will lose weight but still not be happy because of protruding abdomens or large hips/waists. They will start on another diet to solve their problem. They forget or do not know that weight loss must be combined with exercise to firm and tighten muscles to attain the "trim" portion of the statement (13,20). Education is very important so the soldier understands that dieting or weight loss without exercise or lifelong changes in habits will not work and can be dangerous.

Concern with Health was the second most frequent reason for losing weight. It shows that soldiers are health conscious and may be willing to change their habits to improve their health. They would be willing to use Army resources if they were available. At the present time, most are depending on unprofessional sources such as friends or someone else to help them decide on a technique to lose unwanted weight.

Upcoming weigh-in was not as important as appearance or concerned with health as a reason for losing weight. However, it was listed at least 20% of the time as a reason for losing weight, and it was the most frequent reason given by soldiers using undesirable techniques such as bulimia, fasting, diuretics, and laxatives to lose weight. Soldiers who use

these dangerous techniques to avoid exceeding the MAW standard at weigh-ins need help from the Army.

Diet and exercise were the major techniques adopted by soldiers to lose weight (Table 19). These two techniques accounted for 81.4% of the methods used by soldiers to lose weight. Many different types of diets were used to lose weight with reducing intake being the most common technique (392/1267, Appendix U). Dieting behaviors which are significantly higher among bulimic women are: skipping meals, fasting, restricting sweets, restricting fats, and reducing portions (9). Many soldiers in the present study have practiced the more dangerous dietary behaviors of skipping meals (248/618) and fasting (85/618) to control their weight. Many others (66/618) admit to bulimia or vomiting after meals as a weight control technique. These dietary techniques are undesirable because they cause electrolyte imbalances, ketosis, dehydration, etc., (5,7). They are not recommended because they cause cardiovascular changes such as: increased heart rate and decreased stroke volume (17,18), decreased endurance time and strength (15-18,22,23), and short term weight loss, which is usually water. They may cause a dietary deficiency in one or more important nutrients and do not change the bad eating habits that caused the problem in the first place.

The use of diuretics, laxatives, bulimia, and fasting cause a rapid weight loss mainly due to fluid and electrolyte imbalance which can reduce the endurance and cardiovascular and respiratory fitness of humans (4,7,14,15). In the present study the percentage using possibly dangerous techniques of weight control (drugs, saunas, or bulimia) appears small, (14.1%), but these figures show that there may be a problem that should be addressed. Sweeney and Bonnabeau (10) showed that Army Reserve personnel use drugs (laxatives, diuretics, diet pills) and bulimia to control their weight so they can maintain their Reserve military status. Both active duty and reserve personnel who are forced to meet weight standards are using dangerous techniques to lose weight.

Sweeney and Bonnabeau studied 169 Army Reservists and reported: 41.7% lost weight by dieting, 26.5% by diets in the popular press, 4.5% by self-induced vomiting, 12.3% by laxatives, 19.6% by diuretics, and 26% by diet pills (10). The different techniques add up to more than 100% because more than one technique was used for weight loss. The present study showed the same overall proportions with more soldiers using diets to lose weight and fewer subjects using self-induced vomiting (2.7%) and drugs (6.2%). A disturbing aspect is that about 38% of the soldiers who were using drugs or saunas to lose weight used

them for longer than 4 weeks at each weight loss occurrence. About 14.4% of the soldiers who fasted and 29.2% of those on protein sparing fasts used the techniques for 4 or more weeks during each weight loss episode. Besides the long term usage of these techniques, many used the techniques repeatedly (4 or more times) to lose weight. The long duration and repeated use of these techniques cause problems because drugs can be addictive and because many require increased dosages to produce the same effect on repeated usage.

Weight problems are not confined to middle-age or to people that eat too much, they affect everyone and can lead to some very devastating health problems such as Coronary Heart Disease, hypertension, and diabetes. To prevent weight problems and improve the health of its soldiers, the Army may need to expand its health promotion programs to include the soldiers who are "falling through the cracks." All soldiers, whether they have an obvious weight problem or not, need to be the target of a nutrition and fitness health promotion program because they are very likely to fall into one of the following categories: they currently are worried about their weight, they will gain unwanted weight during their Army career, and/or they have been using some undesirable weight control techniques to maintain an appropriate weight. Nutrition/exercise programs and education efforts need to: discourage these undesirable weight loss practices, encourage sensible lifelong weight loss and behavioral changes, discuss the long-term effects of present habits, and relate the total well-being of individuals to interactions of nutrition, fitness, and performance. Soldiers should be educated as soon as they enter the Army and periodically thereafter to catch those who have been attempting to lose weight since childhood and to prevent the weight gain that appears to be inevitable with aging.

CONCLUSIONS

Weight problems appear to be common in the Army but not any more prevalent than in the US civilian population. More than half (57.8%) of the soldiers have attempted to lose weight but are not part of the AWCP and therefore may not be benefiting from the Health Promotion programs. Many soldiers are starting weight control programs before joining the Army and may be continuing these programs to prevent enrollment in the AWCP. About 16.7% were overweight according to the Army's MAW standards, 85.9% considered themselves to be overweight according to their personal ideal weight, and 65.9% of the soldiers had gained weight since joining the Army. Appearance, concerned with health, and upcoming weigh-in are the major reasons that the soldiers gave for using weight control techniques such as diet and exercise. A small percentage have used undesirable techniques such as drugs, saunas, bulimia, fasting, etc to lose weight before upcoming weigh-ins. The problem is that some of these techniques have been used for long durations and repeatedly. Weight concerns appear to be a lifelong problem. Nutrition/exercise programs and education efforts need to: discourage these undesirable weight loss practices, encourage sensible lifelong weight loss and behavioral changes, discuss the long-term effects of present habits, and relate well-being to nutrition, exercise, fitness, and performance.

RECOMMENDATIONS

The Health Promotion program needs to be expanded to include an integrated educational program that encompasses weight control and sound weight loss methods. The program should:

1. Emphasize the interrelationships of nutrition, exercise, fitness, performance, and the long-term effects of lifestyle.

2. Start education at basic training and continue annually throughout their Army career so soldiers understand the consequences of their habits.

3. Contain nutrition/exercise programs and education efforts to:
   a. Discourage undesirable weight loss practices
   b. Encourage sensible weight loss and life-long behavioral changes
   c. Discuss the long-term effects of present habits

REFERENCES

1. Headquarters, Department of the Army, The Army Weight Control Program, AR600-9, effective 15 April 1983.

2. U.S. Army Soldier Support Center, Fort Benjamin Harrison, IN FC21-451I Am The American Soldier, October 1986.

3. Hawkins, M.R., Cooke, A.J., Major, J.E. An evaluation of the weight control program at a U.S. Army installation. Mil Med 151,185-186;1986.

4. Klinzing, J.E., Karpowicz, W. The effects of rapid weight loss and rehydration on a wrestling performance test. J Sports Med 26,149-156;1986.

5. Frank, A., Graham, C., Frank, S. Fatalities on the liquid-protein diet: An analysis of possible causes. Int J Obes 5:243-248,1981.

6. Alpert, M.A., Terry, B.E., Kelly, D.L. Effect of weight loss on cardiac chamber size, wall thickness and left ventricular function in morbid obesity. Am J Cardiol 55:783-786,1985.

7. Aoki, T.T. Metabolic adaptations to starvation, semistarvation, and carbohydrate restriction. In: Nutrition in the 1980s: Constraints on our Knowledge. New York:Alan R. Liss, Inc. 1981,161-177.

8. Dillon, T.T. Incidence of bulimia in a selected United States Army population. Master of Science Thesis, 1989, University of Maryland.

9. Greene, G.W., Achterberg, C., Crumbaugh, J., Soper, J. Dietary intake and dieting practices of bulimic and non-bulimic female college students. J Am Diet Assoc 90:576-578,1990.

10. Sweeney, S.S., Bonnabeau, R.G. Positive and negative health behaviors used to ensure compliance with the U.S. Army's weight control standards by a reserve component unit. Mil Med 155;255-260, 1990.

11. Blackburn, G.L., Wilson, G.T., Kanders, B.S., Stein, L.J., Lavin, P.T., Adler, J., Brownell, K.D. Weight cycling: The experience of human dieters. Am J Clin Nutr 49:1105-1109,1989.

12. Brownell, K., Greenwood, M.R.C., Stellar, E., Shrager, E.E. The effects of repeated cycles of weight loss and regain in rats. Physiol Behav 38:459-464,1986.

13. Pavlou, K.N., Whatley, J.E., Jannace, P.W., DiBartolomeo, J.J., Burrows, B.A., Duthie, E.A.M., Lerman, R.H. Physical activity as a supplement to a weight-loss dietary regimen. Am J Clin Nut 49:1110-1114,1989.

14. Astrand, P.O., Rodahl, K. Textbook of Work Physiology. New York:McGraw-Hill Book Co, 1977,556.

15. Saltin, B. Circulatory response to submaximal and maximal exercise after thermal dehydration. J Appl Physiol 19:1125-1132,1964.

16. Houston, M.E., Marrin, D.A., Green, H.J., Thomson, J.A. The effect of rapid weight loss on physiological functions on wrestlers. Phys Sport Med 9:73-78,1981.

17. Torranin, C., Smith, D.P., Byrd, R.J. The effects of acute dehydration and rehydration on isometric and isotonic endurance. Med Sci Sports 8:53,1976.

18. Allen, T.E., Smith, D.P., Miller, D.K. Hemodynamic response to submaximal exercise after dehydration and rehydration in high school wrestlers. Med Sci Sports 9:159-163,1977.

19. Herbert, W.G., Ribisil, P.M. Effects of dehydration upon the physical work capacity of wrestlers under competitive conditions. Res Quart 43:416, 1972.

20. Pavlou, K.N., Krey, S., Steffee, W.P. Exercise as an adjunct to weight loss and maintenance in moderately obese subjects. Am J Clin Nutr 49:1115-1123,1989.

21. Saris, W.H.M. Physiological aspects of exercise in weight cycling. Am J Clin Nutr 49:1099-1104,1989.

22. Taylor, H.L., Buskirk, E.R., Brozek, J., Anderson, J.T., Grande, F. Performance capacity and effects of caloric restriction with hard physical work on young men. J Appl Physiol 10:421-429,1957.

23. Bosco, J.S., Terjung, R.I., Greenleaf, J.E. Effects of progressive hypohydration on maximal isometric muscular strength. J Sports Med Phys Fitness 8:81-86,1968.

APPENDIX A

SURVEY QUESTIONNAIRE

my sample Survey

WEIGHT LOSS ATTEMPTS BY ACTIVE DUTY ARMY SOLDIERS

THIS FORM IS AFFECTED BY THE PRIVACY ACT OF 1974

1. AUTHORITY: 10 USC 3013, 44 USC 3101 and 10 USC 1071-1087.

2. PRINCIPLE PURPOSE: To document voluntary participation in the Clinical Investigation and Research Program. SSN and home address will be used for identification and locating purpose.

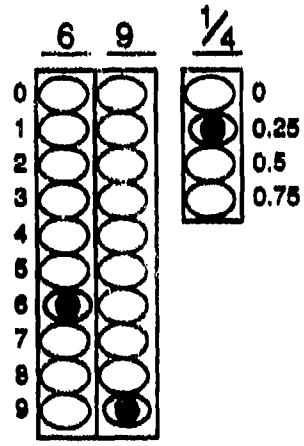
3. ROUTINE USES: The SSN and home address will be used for identification and locating purposes. Information derived from the study will be used to document the study; implementation of medical programs; teaching; adjudication of claims; and for the mandatory reporting of medical condition as required by law. Information may be furnished to Federal, State and local agencies.

4. MANDATORY OR VOLUNTARY DISCLOSURE: The furnishing of SSN and home address is mandatory and necessary to provide identification and to contact you if future information indicates that your health may be adversely affected. Failure to provide the information may preclude your voluntary participation in this investigational study.

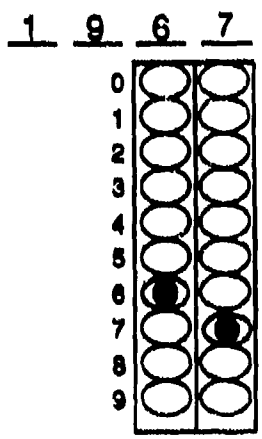
SAMPLE QUESTIONS:

WRITE YOUR ANSWER IN THE BLANK SPACES AT THE TOP OF THE COLUMNS, THEN FILL IN THE CORRESPONDING CIRCLE FOR EACH DIGIT.

A. What is your current height ?



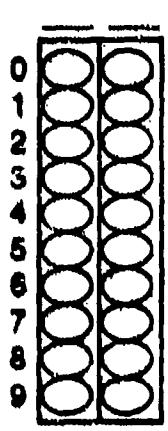
B. What year were you born ?



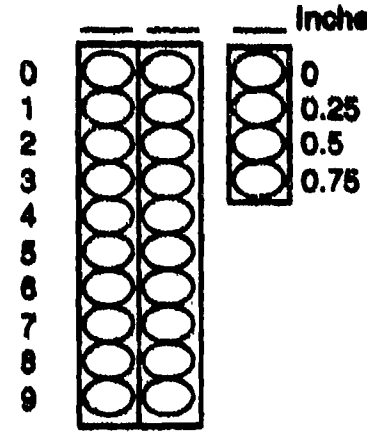
Proper Mark

DO NOT FOLD QUESTIONNAIRE

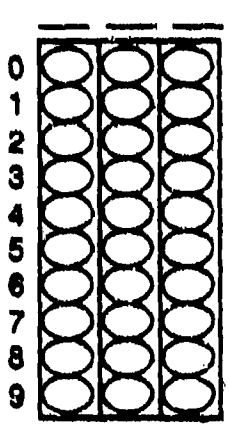
1. What is your age?



2. What is your current height?

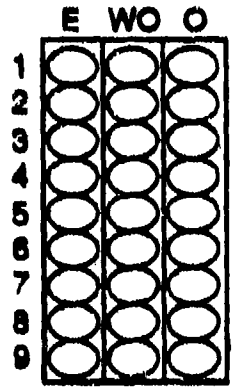


3. What is your weight?



DO NOT WRITE IN THIS BOX

4. What is your military rank?



5. How long have you been in the Armed Services?

- 0-2 years
- 2-5 years
- 5-10 years
- 10-15 years
- 15-20 years
- More than 20 years

6. What is your race/ethnic background?

- CAUCASIAN
- BLACK
- ASIAN-PACIFIC ISLANDER
- HISPANIC
- NATIVE AMERICAN
- OTHER (specify)

_____

7. What is your highest level of education?

- SOME GRADE SCHOOL
- FINISHED GRADE SCHOOL
- SOME HIGH SCHOOL
- HIGH SCHOOL GRADUATE (Includes GED)
- SKILLED JOB TRAINING
- SOME COLLEGE (Includes Associates Degree)
- COLLEGE GRADUATE

8. Where do you live?

- BARRACKS
- CIVILIAN HOUSING
- MILITARY HOUSING ON POST
- MILITARY HOUSING OFF POST

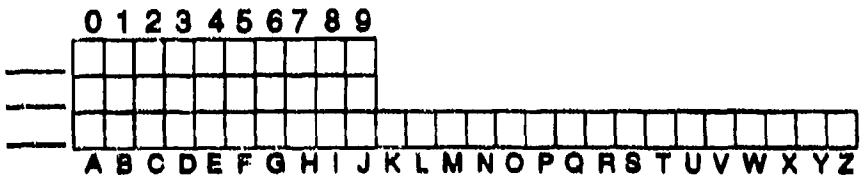
9. What is your gender?

- MALE
- FEMALE

10. What is your marital status?

- SINGLE
- MARRIED
- DIVORCED / SEPARATED

11. What is your MOS?



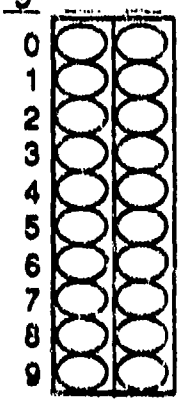
12. Have you ever attempted to lose weight? YES NO

If your answer is NO, stop here and return the questionnaire.

If your answer is YES, continue with the questionnaire.

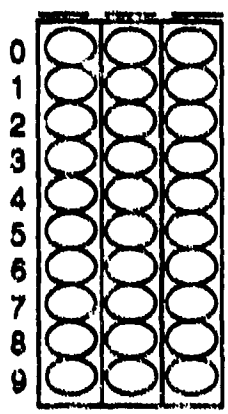
13. What year did you first decide you needed to lose weight?

1 9



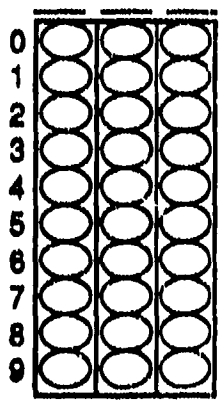
14. How much did you weigh when you joined the Army?

_____ lbs.



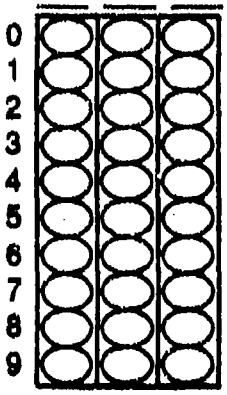
15. What do you consider to be your "ideal" weight?

_____ lbs.



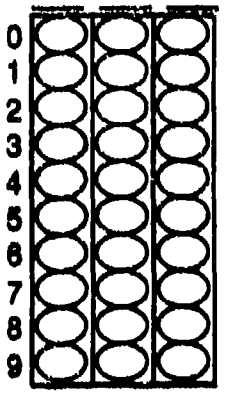
16. What has been your LOWEST weight since joining the Army?

___ ___ ___ lbs.



17. What has been your HIGHEST weight since joining the Army?

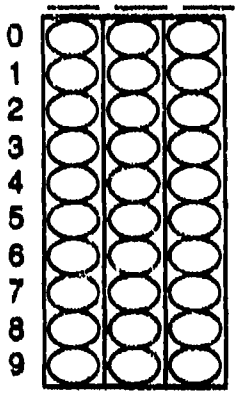
___ ___ ___ lbs.



18. Are you trying to lose weight now? ◯ YES ◯ NO **If your answer is NO, skip to question 19.**

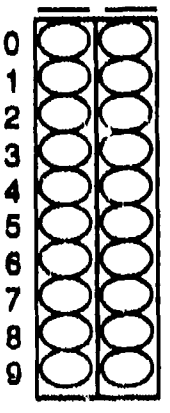
18a. How much weight are you trying to lose now?

___ ___ ___ lbs.



18b. In what period of time would you like to lose this weight?

___ ___ weeks



19. Have you ever been enrolled in the Army Weight Control Program (AWCP)?

◯ YES ◯ NO **If your answer is NO, skip to question 22.**

20. How many times were you enrolled in the AWCP?

◯ ONCE
◯ TWICE
◯ THREE TIMES
◯ FOUR OR MORE TIMES (≥4)

21. When was your latest enrollment in the AWCP?

◯ WITHIN THE LAST 6 MONTHS
◯ 6-12 MONTHS
◯ 13-24 MONTHS
◯ 25-48 MONTHS
◯ MORE THAN 48 MONTHS

22. Please indicate the duration, number of times, and reasons that you have engaged in any of the following activities to lose weight **within the last two years:**

NOTE: * Duration is the amount of time that you used this method (≤ 1 is 1 week or less, ≥ 4 is 4 or more weeks).

** Key to reasons for losing weight (mark all reasons that apply): .

1. Upcoming weigh-in
2. Appearance, to include fit of clothes
3. Healthy but concerned
4. Ordered to lose weight by doctor or AWCP
5. Other (Specify under comment section, question 27).

ACTIVITY	*AVERAGE DURATION OF ACTIVITY (weeks)				NUMBER OF TIMES ACTIVITY USED TO LOSE WEIGHT				**REASONS FOR ATTEMPTING TO LOSE WEIGHT WITH THIS METHOD				
	≤ 1	2	3	≥ 4	1	2	3	≥ 4	1	2	3	4	5
Make yourself vomit after eating (Bulimia)	○	○	○	○	○	○	○	○	○	○	○	○	○
Dieting:													
High Carbohydrate	○	○	○	○	○	○	○	○	○	○	○	○	○
High Protein	○	○	○	○	○	○	○	○	○	○	○	○	○
Low Calorie	○	○	○	○	○	○	○	○	○	○	○	○	○
Low Carbohydrate	○	○	○	○	○	○	○	○	○	○	○	○	○
Protein Sparing Fast	○	○	○	○	○	○	○	○	○	○	○	○	○
Skipping Meals	○	○	○	○	○	○	○	○	○	○	○	○	○
Reduce Total Food Intake	○	○	○	○	○	○	○	○	○	○	○	○	○
Total Fasting	○	○	○	○	○	○	○	○	○	○	○	○	○
Weight Watchers	○	○	○	○	○	○	○	○	○	○	○	○	○
Others (e.g., Pritikin, Cambridge)													
specify name: _____	○	○	○	○	○	○	○	○	○	○	○	○	○
Medications:													
Diet Pills	○	○	○	○	○	○	○	○	○	○	○	○	○
Diuretics (make you urinate more)	○	○	○	○	○	○	○	○	○	○	○	○	○
Specify others: _____	○	○	○	○	○	○	○	○	○	○	○	○	○
Exercise Program:													
Aerobics at Gym or Club	○	○	○	○	○	○	○	○	○	○	○	○	○
Exercise Videocassettes or TV	○	○	○	○	○	○	○	○	○	○	○	○	○
Specify others: _____	○	○	○	○	○	○	○	○	○	○	○	○	○
_____	○	○	○	○	○	○	○	○	○	○	○	○	○
_____	○	○	○	○	○	○	○	○	○	○	○	○	○
Overeater's Anonymous	○	○	○	○	○	○	○	○	○	○	○	○	○
Sauna	○	○	○	○	○	○	○	○	○	○	○	○	○
Commercial Weight Loss Clinic:													
Nutri-System	○	○	○	○	○	○	○	○	○	○	○	○	○
Optifast	○	○	○	○	○	○	○	○	○	○	○	○	○
Specify others: _____	○	○	○	○	○	○	○	○	○	○	○	○	○
_____	○	○	○	○	○	○	○	○	○	○	○	○	○
Other Methods:													
specify: _____	○	○	○	○	○	○	○	○	○	○	○	○	○

23. How did you decide on what weight loss method to use?

FILL IN THE CIRCLE FOR ALL THAT APPLY:

- ADVICE FROM A FRIEND
- ADVICE FROM SOMEONE ELSE USING THAT METHOD
- RELATIVES
- READING BOOK: (specify the name) _____
- READING MAGAZINE: (specify name) _____
- PROFESSIONAL HELP: (specify source e.g., doctor, dietitian, nurse, etc.) _____
- TV COMMERCIAL (specify product) _____
- TV PROGRAM (specify program) _____
- OTHER: (specify)_____

24. If you were going to get help in designing a weight loss diet plan for yourself, would you seek help outside the Army resources before going to an Army source?

YES NO

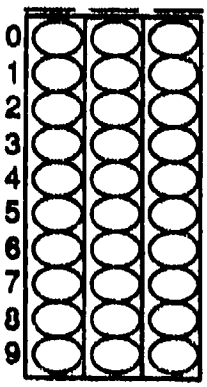
25. Since, joining the Army, how many times have you attempted to lose weight AND reached your "ideal" body weight?

NEVER ONCE TWICE THREE TIMES FOUR OR MORE TIMES (≥4)

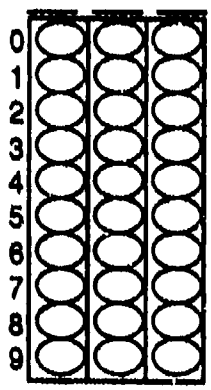
If your answer is NEVER, please go to question 26.

How long did you maintain your "ideal" body weight?

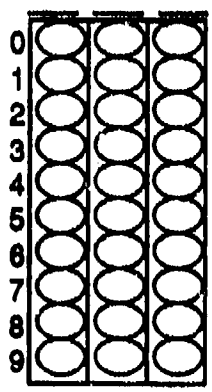
first time? weeks



second time? weeks



third time? weeks



26. What were some reasons for not reaching your "ideal" weight?

27. Comments:

THANK YOU !!!

APPENDIX B

GLOSSARY

Army WT	Weight when soldier first joined the Army
AWCP	Army's Weight Control Program
Ideal WT	Weight considered ideal by soldier for himself
MAW	Maximum Allowable Weight; standard determined by AR600-9
MAW - Ideal WT	Maximum Allowable Weight standard minus weight that the soldier considers to be his ideal weight; indicates difference between Army's standard and soldier's personal weight goal
Max WT	Maximum weight soldier has weighed since joining the Army
Min WT	Minimum weight soldier has weighed since joining the Army
Min WT - Max WT	Maximum weight of soldier minus minimum weight of soldier; indicates maximum weight change since joining the Army
MHWT	Metropolitan Height Weight Table; 1983 revision
WT - Army WT	Current weight minus weight when the soldier first joined the Army
WT - Ideal WT	Current weight minus weight considered ideal by soldier; indicates the amount of weight that is the soldier's personal goal
WT - MAW	Current weight minus Maximum Allowable Weight; indicates amount overweight according to Army's standard

APPENDIX C
PHYSICAL CHARACTERISTICS OF ALL SUBJECTS

FEMALES
(n=189)

	MEAN ± SD	MIN	MAX
Age, yrs	31.3 ± 7.1	18	52
Height, in	65.1 ± 2.7	58.5	72.0
Weight, lb	134.6 ± 16.7	100	185

MALES
(n=880)

	MEAN ± SD	MIN	MAX
Age, yrs	32.2 ± 8.2	17	58
Height, in	69.7 ± 2.8	59	78.75
Weight, lb	173.0 ± 23.1	110	280

APPENDIX D
DEMOGRAPHICS ON ALL SUBJECTS

RACE

ETHNIC GROUP	FREQUENCY	%[1]
Caucasian	838	78.4
Black	125	11.7
Asian-Pacific	15	1.4
Hispanic	58	5.4
Native American	14	1.3
Other/Nothing	19	1.8
TOTAL	1069	

[1]May not add up to 100% due to rounding.

EDUCATIONAL LEVEL

EDUCATIONAL LEVEL	FREQUENCY	%[1]
Grade School	2	0.2
Some High School	1	0.1
High School or GED	245	22.9
Skilled Training	20	1.9
Some College incl Asso of Arts	321	30.0
College Grad	478	44.7
High School & Skilled	2	0.2
TOTAL	1069	

[1]May not add up to 100% due to rounding.

APPENDIX D (cont'd)
PLACE OF RESIDENCE

RESIDENCE	FREQUENCY	%[1]
Barracks	207	19.4
Civilian Housing	524	49.0
Military, On Post	255	23.9
Military, Off Post	83	7.8
TOTAL	1069	

[1]May not add up to 100% due to rounding.

GENDER

GENDER	FREQUENCY	%[1]
Male	880	82.3
Female	189	17.7
TOTAL	1069	

[1]May not add up to 100% due to rounding.

MARITAL STATUS

MARITAL STATUS	FREQUENCY	%[1]
Single	272	25.4
Married	720	67.4
Divorced/Separated	73	6.8
Not Marked	4	0.4
TOTAL	1069	

[1]May not add up to 100% due to rounding.

APPENDIX D (cont'd)
TIME IN SERVICE

TIS (years)	FREQUENCY	%[1]
0-2	117	10.9
2-5	183	17.1
5-10	260	24.3
10-15	205	19.2
15-20	195	18.2
>20	109	10.2
TOTAL	1069	

[1]May not add up to 100% due to rounding.

APPENDIX E

COMPARISON OF MINIMUM WEIGHT TO MAXIMUM WEIGHT (MIN WT-MAX WT) OF SOLDIERS WHO ATTEMPTED TO LOSE WEIGHT

MIN WT-MAX WT[1] (lbs)	MALE		FEMALE		TOTAL	
	FREQ	%[1]	FREQ	%	FREQ	%
-61+						
-51 to -60						
-41 to -50						
-31 to -40						
-21 to -30						
-11 to -20						
- 1 to -10						
0	1	0.2			1	0.2
1 to 10	19	4.0	20	13.9	39	6.3
11 to 20	106	22.4	48	33.3	154	24.9
21 to 30	121	25.5	31	21.5	152	24.6
31 to 40	87	18.4	23	16.0	110	17.8
41 to 50	57	12.0	7	4.9	64	10.4
51 to 60	49	10.3	5	3.5	54	8.7
61+	28	5.9	9	6.3	37	6.1
Missing	6	1.3	1	0.7	7	1.1
TOTAL	474		144		618	

[1]May not add up to 100% due to rounding.

APPENDIX F

COMPARISON OF CURRENT WEIGHT TO MINIMUM WEIGHT (WT-MIN WT) OF SOLDIERS WHO ATTEMPTED TO LOSE WEIGHT

WT-MIN WT[1] (lbs)	MALE		FEMALE		TOTAL	
	FREQ	%[1]	FREQ	%	FREQ	%
-61+						
-51 to -60						
-41 to -50						
-31 to -40						
-21 to -30						
-11 to -20						
- 1 to -10						
0	13	2.7	8	5.6	21	3.4
1 to 10	129	27.2	63	43.7	192	31.0
11 to 20	146	30.8	39	27.1	185	29.9
21 to 30	98	20.7	20	13.9	118	19.1
31 to 40	43	9.1	9	6.3	52	8.4
41 to 50	27	5.7	4	2.8	31	5.0
51 to 60	14	3.0			14	2.3
61+	2	0.4			2	0.3
Missing	2	0.4	1	0.7	3	0.5
TOTAL	474		144		618	

[1]May not add up to 100% due to rounding.

APPENDIX G

COMPARISON OF CURRENT WEIGHT TO MAXIMUM WEIGHT (WT-MAX WT) OF SOLDIERS WHO ATTEMPTED TO LOSE WEIGHT

WT-MAX WT (lbs)	MALE		FEMALE		TOTAL	
	FREQ	%[1]	FREQ	%	FREQ	%
-61+	2	0.4	4	2.8	6	1.0
-51 to -60	6	1.3	3	2.1	9	1.5
-41 to -50	7	1.5	3	2.1	10	1.6
-31 to -40	23	4.9	4	2.8	27	4.4
-21 to -30	60	12.7	10	6.9	70	11.3
-11 to -20	133	28.1	34	23.6	167	27.0
- 1 to -10	215	45.4	73	50.7	288	46.7
0	23	4.9	13	9.0	36	5.8
1 to 10						
11 to 20						
21 to 30						
31 to 40						
41 to 50						
51 to 60						
61+						
Missing	5	1.1	0	0	5	0.8
TOTAL	474		144		618	

[1]May not add up to 100% due to rounding.

APPENDIX H
AGE STARTED LOSING WEIGHT

AGE (years)	FREQUENCY	%[1]
5	2	0.3
6	2	0.3
7	1	0.2
8	1	0.2
9	2	0.3
10	1	0.2
11	2	0.3
12	6	1.0
13	6	1.0
14	9	1.5
15	10	1.6
16	13	2.1
17	29	4.7
18	25	4.0
19	18	2.9
20	26	4.2
21	31	5.0
22	32	5.2
23	30	4.9
24	35	5.7
25	31	5.0
26	25	4.0
27	33	5.3
28	21	3.4
29	27	4.4
30	24	3.9
31	29	4.7
32	15	2.4
33	17	2.8
34	10	1.6
35	13	2.1
36	9	1.5
37	13	2.1
38	12	1.9
39	6	1.0
40	8	1.3
41	7	1.1
42	6	1.0
43	7	1.1
44	5	0.8
46	2	0.3
47	3	0.5
50	1	0.2
55	1	0.2
Missing	12	1.9
TOTAL	618	

[1]May not add up to 100% due to rounding.

APPENDIX I
ENROLLEES IN THE AWCP ACCORDING TO MILITARY RANK

MILITARY RANK	MALE	FEMALE	TOTAL	%[1]
E1	1	0	1	1.1
E2	0	2	2	2.2
E3	0	1	1	1.1
E4	12	1	13	14.1
E5	10	3	13	14.1
E6	18	5	23	25.0
E7	16	2	18	19.6
E8	2	0	2	2.2
E9	0	0	0	0
WO1 & WO2	1	0	1	1.1
WO3 & WO4	0	0	0	0
2LT	1	0	1	1.1
1LT	2	1	3	3.3
CPT	2	0	2	2.2
MAJ	7	1	8	8.7
LTC	3	0	3	3.3
COL	1	0	1	1.1
GEN	0	0	0	0
TOTAL	76	16	92	

[1]May not add up to 100% due to rounding.

APPENDIX J
DEMOGRAPHICS ON SOLDIERS ENROLLED IN THE AWCP

VARIABLES	MEAN	SD	MIN	MAX
Age (yrs)	32	7	19	52
Ht (in)	69	3	60	75
WT (lbs)	190	26	123	250

TIME IN SERVICE

TIS (years)	FREQUENCY	%[1]
0-2 yr	5	5.4
2-5	16	17.4
5-10	21	22.8
10-15	20	21.7
15-20	23	25.0
>20	7	7.6
TOTAL	92	

[1]May not add up to 100% due to rounding.

RACE

ETHNIC GROUP	FREQUENCY	%[1]
Caucasian	74	80.4
Black	10	10.9
Hispanic	3	3.3
Native American	3	3.3
Other	2	2.2
TOTAL	92	

[1]May not add up to 100% due to rounding.

APPENDIX J (cont'd)
EDUCATIONAL LEVEL

EDUCATIONAL LEVEL	FREQUENCY	%[1]
HS Grad or GED	21	22.8
Some College incl AS	49	53.3
College Grad	22	23.9
TOTAL	92	

[1]May not add up to 100% due to rounding.

RESIDENCE

RESIDENCE	FREQUENCY	%[1]
Barracks	15	16.3
Civilian Housing	38	41.3
Military On Post Housing	25	27.2
Military Off Post Housing	14	15.2
TOTAL	92	

[1]May not add up to 100% due to rounding.

GENDER

GENDER	FREQUENCY	%[1]
Male	76	82.6
Female	16	17.4
TOTAL	92	

[1]May not add up to 100% due to rounding.

APPENDIX J (cont'd)
MARITAL STATUS

MARITAL STATUS	FREQUENCY	%[1]
Single	18	19.6
Married	66	71.7
Divorced/Separated	7	7.6
Missing	1	1.1
TOTAL	92	

[1]May not add up to 100% due to rounding.

APPENDIX K
NUMBER OF TIMES ENROLLED IN AWCP

# OF TIMES	FREQUENCIES	%[1]
1	63	68.5
2	19	20.7
3	7	7.6
≥4	3	3.3
TOTAL	92	

[1]May not add up to 100% due to rounding.

APPENDIX L
LATEST ENROLLMENT IN AWCP IN RELATIONSHIP TO SURVEY

TIME PERIOD (months)	FREQUENCIES	%[1]
Within last 6 months	14	15.2
6-12	16	17.4
13-24	13	14.1
25-48	17	18.5
>48	31	33.7
Missing	1	1.1
TOTAL	92	

[1]May not add up to 100% due to rounding.

APPENDIX M

COMPARISON OF THE MAXIMUM ALLOWABLE WEIGHT STANDARD TO THE IDEAL WEIGHT (MAW-IDEAL WT) OF SOLDIERS ENROLLED IN THE AWCP

MAW-IDEAL WT (lbs)	FREQUENCY	%[1]
-61 to -99	1	1.1
-51 to -60	0	0
-41 to -50	0	0
-31 to -40	0	0
-21 to -30	0	0
-11 to -20	7	7.6
- 1 to -10	22	23.9
0	6	6.5
1 to 10	25	27.2
11 to 20	23	25.0
21 to 30	8	8.7
31 to 40	0	0
41 to 50	0	0
51 to 60	0	0
61+	0	0
TOTAL	92	

- = Ideal WT higher than MAW
+ = Ideal WT less than MAW

[1]May not add up to 100% due to rounding.

APPENDIX N

COMPARISON OF CURRENT WEIGHT TO MAXIMUM ALLOWABLE WEIGHT STANDARD (WT-MAW) OF SOLDIERS ENROLLED IN THE AWCP

WT-MAW (lbs)	FREQUENCY	%[1]
-61 to -99	0	0
-51 to -60	0	0
-41 to -50	0	0
-31 to -40	0	0
-21 to -30	0	0
-11 to -20	3	3.3
-1 to -10	22	23.9
0	2	2.2
1 to 10	23	25.0
11 to 20	18	19.6
21 to 30	16	17.4
31 to 40	5	5.4
41 to 50	2	2.2
51 to 60	0	0
61 to 99	1	1.1
TOTAL	92	

- = Weight < MAW
+ = Weight > MAW

[1]May not add up to 100% due to rounding.

APPENDIX O

COMPARISON OF CURRENT WEIGHT TO THE IDEAL WEIGHT (WT-IDEAL WT) OF SOLDIERS ENROLLED IN THE AWCP

WT-Ideal WT (lbs)	FREQUENCY	%[1]
-61 to -99	0	0
-51 to -60	0	0
-41 to -50	0	0
-31 to -40	0	0
-21 to -30	0	0
-11 to -20	1	1.1
- 1 to -10	3	3.2
0	3	3.3
1 to 10	31	33.7
11 to 20	28	30.4
21 to 30	15	16.3
31 to 40	8	8.7
41 to 50	3	3.3
51 to 60	0	0
61 to 99	0	0
TOTAL	92	

- = Ideal WT > Weight
+ = Weight > Ideal WT

[1]May not add up to 100% due to rounding.

APPENDIX P

COMPARISON OF CURRENT WEIGHT TO THAT WHEN JOINING THE ARMY (WT-ARMY WT) OF SOLDIERS ENROLLED IN THE AWCP

WT-Army WT (lbs)	FREQUENCY	%[1]
-61 to -99	0	0
-51 to -60	0	0
-41 to -50	2	2.2
-31 to -40	1	1.1
-21 to -30	2	2.2
-11 to -20	8	8.7
- 1 to -10	16	17.4
0	2	2.2
1 to 10	20	21.7
11 to 20	16	17.4
21 to 30	8	8.7
31 to 40	8	8.7
41 to 50	4	4.3
51 to 60	3	3.3
61 to 99	1	1.1
Missing	1	1.1
TOTAL	92	

- = Lost weight since joining Army
+ = Gained weight since joining the Army

[1]May not add up to 100% due to rounding.

APPENDIX Q
COMPARISON OF MINIMUM WEIGHT TO MAXIMUM WEIGHT (MAX WT-MIN WT) OF SOLDIERS ENROLLED IN THE AWCP

MAX WT-MIN WT (lbs)	FREQUENCY	%[1]
-61 to -99	0	0
-51 to -60	0	0
-41 to -50	0	0
-31 to -40	0	0
-21 to -30	0	0
-11 to -20	0	0
- 1 to -10	0	0
0	0	0
1 to 10	2	2.2
11 to 20	10	10.9
21 to 30	21	22.8
31 to 40	12	13.0
21 to 50	16	17.4
51 to 60	20	21.7
61 to 99	10	10.9
Missing	1	1.1
TOTAL	92	

+ = Maximum weight change since joining the army

[1]May not add up to 100% due to rounding.

APPENDIX R

COMPARISON OF CURRENT WEIGHT TO MINIMUM WEIGHT (WT-MIN WT) OF SOLDIERS ENROLLED IN THE AWCP

WT-MIN WT (lbs)	FREQUENCY	%[1]
-61 to -99	0	0
-51 to -60	0	0
-41 to -50	0	0
-31 to -40	0	0
-21 to -30	0	0
-11 to -20	0	0
-1 to -10	0	0
0	2	2.2
1 to 10	19	20.7
11 to 20	30	32.6
21 to 30	21	22.8
31 to 40	5	5.4
41 to 50	10	10.9
51 to 60	3	3.3
61 to 99	1	1.1
Missing	1	1.1
TOTAL	92	

- = Min WT > WT
+ = WT > Min WT

[1]May not add up to 100% due to rounding.

APPENDIX S

COMPARISON OF CURRENT WEIGHT TO MAXIMUM WEIGHT (WT-MAX WT) OF SOLDIERS ENROLLED IN THE AWOP

WT-MAX WT (lbs)	FREQUENCY	%[1]
-61 to -99	2	2.2
-51 to -60	1	1.1
-41 to -50	4	4.3
-31 to -40	12	13.0
-21 to -30	15	16.3
-11 to -20	27	29.3
-1 to -10	27	29.4
0	4	4.3
1 to 10	0	0
11 to 20	0	0
21 to 30	0	0
31 to 40	0	0
41 to 50	0	0
51 to 60	0	0
61 to 99	0	0
TOTAL	92	

- = Max WT > WT
+ = WT > Max WT

[1]May not add up to 100% due to rounding.

APPENDIX T

AGE STARTED WEIGHT LOSS PROGRAMS FOR SOLDIERS ENROLLED IN THE AWCP

AGE (years)	FREQUENCY	%[1]
12-20	22	23.9
21-30	53	57.6
31-40	16	17.4
Missing	1	1.1
TOTAL	92	

[1]May not add up to 100% due to rounding.

APPENDIX U
DETAILED CHARTS ON
MAJOR REASON FOR USING A WEIGHT LOSS TECHNIQUE

TECHNIQUES	REASON	FREQUENCIES
BULIMIA	Upcoming Weigh-In	13
DIETS		
HI CHO	Appearance	18
HI Pro	Appearance	17
Low Kcal	Appearance	58
Low CHO	Appearance	18
Protein Sparing Fast	Appearance	11
Skipping Meals	Appearance	62
Reduce Intake	Appearance	1032
Fasting	Upcoming Weigh-In	25
Low Fat	Appearance, Concerned with Health	3
Slim Fast®	Appearance, Concerned with Health	4
Dietitian	Appearance, Concerned with Health	2
Scarsdale	Not stated	1
CALBAN 3000	Upcoming Weigh-In;	1
	Ordered to Lose	1
Dick Gregory	Concerned with Health;	1
	Upcoming Weigh-In, Appearance, Healthy but Concerned	1
Miscellaneous Diets	Appearance	5
DRUGS		
Diet Pills	Appearance	20
Diuretics	Upcoming Weigh-In	12
Laxatives	Upcoming Weigh-In	4
Miscellaneous Drugs	Appearance;	1
	Concerned with Health,Ordered to Lose;	1
	Upcoming Weigh-In, Appearance, Concerned with Health	1
EXERCISE/ACTIVITY		
Aerobics	Appearance	49
Exercise VCR or TV	Appearance	13
Increased Activity	Concerned with Health	3
	Appearance, Concerned with Health	3
Jogging/Running	Appearance, Concerned with Health	39
Weight Lifting/Nautilus	Appearance	21
Combination of Sports	Appearance	3
Unit PT	Appearance	8
Swimming	Appearance, Concerned with Health	5
Walking	Appearance, Concerned with Health	4
Personal PT	Appearance, Concerned with Health	18
Biking	Healthy	8
Team Sports	Healthy	8

APPENDIX U (cont'd)
DETAILED CHARTS ON
MAJOR REASON FOR USING A WEIGHT LOSS TECHNIQUE

TECHNIQUES	REASON	FREQUENCIES
EXERCISE (cont'd)		
Tennis/Racquetball	Appearance, Concerned with Health	5
Wrestling	Appearance, Concerned with Health	1
Miscellaneous Activity	Appearance, Concerned with Health	2
	Upcoming Weigh-In	2
SAUNA	Appearance	29
COMMERCIAL CLINICS		
Nutri-System	Appearance	4
Optifast	Appearance	3
Weight Watchers	Appearance	14
Miscellaneous Clinics	Appearance	3
Overeater's Anonymous	Appearance	4

APPENDIX V
DETAILED CHARTS ON WEIGHT CONTROL TECHNIQUES USED BY SOLDIERS ATTEMPTING TO LOSE WEIGHT

TECHNIQUES	FREQUENCY	PERCENT
BULIMIA	66	2.7
DIETS		
HI CHO	78	3.2
HI Pro	71	2.9
Low Kcal	224	9.2
Low CHO	64	2.6
Protein Sparing Fast	50	2.1
Skipping Meals	248	10.2
Reduce Intake	392	16.2
Fasting	85	3.5
Low Fat	6	0.2
Slim Fast®	22	0.9
Dietitian	6	0.2
Scarsdale	1	0
CALBAN 3000	2	0.1
Dick Gregory	2	0.1
Miscellaneous Diets	16	0.7
DRUGS		
Diet Pills	90	3.7
Diuretics	46	1.9
Laxatives	9	0.4
Miscellaneous Drugs	5	0.2
EXERCISE/ACTIVITY		
Aerobics	232	9.6
Exercise VCR or TV	57	2.4
Increased Activity	10	0.4
Jogging/Running	165	6.8
Weight Lifting/Nautilus	70	2.9
Combination of Sports	7	0.3
Unit PT	30	1.2
Swimming	16	0.7
Walking	12	0.5
Personal PT	46	1.9
Biking	25	1.0
Team Sports	11	0.5
Tennis/Racquetball	13	0.5
Wrestling	2	0.1
Miscellaneous Activity	5	0.2
SAUNA	125	5.2

APPENDIX V (cont'd)
DETAILED CHARTS ON WEIGHT CONTROL TECHNIQUES USED BY SOLDIERS ATTEMPTING TO LOSE WEIGHT

TECHNIQUES	FREQUENCY	PERCENT
COMMERCIAL CLINICS		
Nutri-System	19	0.8
Optifast	12	0.5
Weight Watchers	50	2.1
Miscellaneous Clinics	8	0.3
Overeater's Anonymous	19	0.8
TOTAL	2417	

APPENDIX W
DETAILED CHARTS ON DURATION OF USAGE OF WEIGHT CONTROL TECHNIQUES

	DURATION (weeks)			
	≤1	2	3	≥4
BULIMIA	49	2	3	5
DIETS				
HI CHO	18	14	11	25
HI Pro	17	14	6	24
Low Kcal	16	27	33	132
Low CHO	18	12	10	18
Protein Sparing Fast	18	7	4	12
Skipping Meals	27	47	33	127
Reduce Intake	31	51	54	239
Fasting	49	13	4	10
Low Fat	0	0	1	4
Slim Fast®	4	7	2	9
Dietitian	2	2	0	2
Scarsdale	0	1	0	0
CALBAN 3000	0	0	0	2
Dick Gregory	0	2	0	0
Miscellaneous Diets	0	3	2	10
DRUGS				
Diet Pills	18	22	8	35
Diuretics	22	6	2	12
Laxatives	5	1	0	3
Miscellaneous Drugs	0	1	2	2
EXERCISE/ACTIVITY				
Aerobics	12	11	24	173
Exercise VCR or TV	12	11	4	25
Increased Activity	0	1	2	5
Jogging/Running	4	4	5	145
Weight Lifting/Nautilus	1	4	3	58
Combination of Sports	0	0	0	7
Unit PT	1	0	1	27
Swimming	1	0	1	14
Walking	0	1	2	6
Personal PT	1	2	3	36
Biking	2	1	1	20
Team Sports	0	0	2	8
Tennis/Racquetball	0	0	2	10
Wrestling	0	0	0	2
Miscellaneous Activity	0	0	1	4
SAUNA	32	24	15	45

APPENDIX W (cont'd)
DETAILED CHARTS ON DURATION OF USAGE
OF WEIGHT CONTROL TECHNIQUES

	DURATION (weeks)				
	≤1	2	3	≥4	
COMMERCIAL CLINICS					
Nutri-System	10	1	0	7	
Optifast	10	1	0	0	
Weight Watchers	16	3	3	21	
Miscellaneous Clinics	3	1	0	4	
Overeater's Anonymous	12	1	1	2	
TOTAL	411	298	245	1294	2248
Percent	(18.3)	(13.3)	(10.9)	(57.6)	

APPENDIX X
DETAILED CHARTS ON NUMBER OF TIMES WEIGHT CONTROL TECHNIQUES USED TO LOSE WEIGHT

	TIME			
	1	2	3	≥4
BULIMIA	26	4	3	12
DIETS				
Hi CHO	24	10	6	20
Hi Pro	22	7	4	23
Low Kcal	27	24	24	123
Low CHO	24	7	8	12
Protein Sparing Fast	15	5	1	19
Skipping Meals	18	23	26	151
Reduce Intake	37	30	51	239
Fasting	24	11	7	28
Low Fat	2	0	0	2
Slim Fast®	6	3	0	10
Dietitian	3	1	0	0
Scarsdale	0	0	0	1
CALBAN 3000	1	1	0	0
Dick Gregory	0	1	0	1
Miscellaneous Diets	4	6	2	3
DRUGS				
Diet Pills	26	18	4	29
Diuretics	20	5	2	12
Laxatives	1	1	1	5
Miscellaneous Drugs	0	1	1	2
EXERCISE/ACTIVITY				
Aerobics	20	23	19	135
Exercise VCR or TV	15	8	5	18
Increased Activity	1	0	2	6
Jogging/Running	15	7	7	114
Weight Lifting/Nautilus	3	7	4	43
Combination of Sports	0	0	0	7
Unit PT	3	0	1	21
Swimming	2	1	0	6
Walking	0	2	1	7
Personal PT	3	1	0	39
Biking	0	3	3	17
Team Sports	0	1	2	5
Tennis/Racquetball	1	2	1	8
Wrestling	0	1	0	1
Miscellaneous Activity	1	0	2	2

APPENDIX X (cont'd)

DETAILED CHARTS ON NUMBER OF TIMES
WEIGHT CONTROL TECHNIQUES USED TO LOSE WEIGHT

	TIME				
	1	2	3	≥4	
SAUNA	26	16	13	51	
COMMERCIAL CLINICS					
Nutri-System	16	2	0	1	
Optifast	12	0	0	0	
Weight Watchers	23	9	4	8	
Miscellaneous Clinics	4	0	1	3	
Overeater's Anonymous	11	2	0	2	
TOTAL	438	243	205	1182	2068
Percent	(21.2)	(11.8)	(9.9)	(57.2)	

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